

Notes on the Holarctic Species of *Pseudexechia*
Tuomikoski (Diptera: Mycetophilidae), with the
Description of a New British Species

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Pseudexechia was established by Tuomikoski (1966) for a small group of closely related species segregated from the old genus *Exechia*, characterised by the absence of discal bristles on the mesoscutum, ovate clypeus and distinctive features of the male genitalia such as the bud-like sternal process. Four described European species, three of them British, were included although Tuomikoski stated that some undescribed species were present in his material; another, *P. tristriata* (Stackelberg) **comb. n.** was described in *Exechia* by Stackelberg (1969).

Of the three British species, *parallela* (Edwards, 1925) is known here only from the female holotype. Stackelberg (1948) figured the male which he identified in Russian material. The species is distinct by its narrow cubital fork with parallel branches from all except *hamulata* (Lackschewitz, 1937), described from a male with genitalia very like Stackelberg's *parallela*. Burghese-Balacesco (1972) figured the ovipositor of a Rumanian specimen identified as *parallela*; her example agreed with Edwards' figure and description except in the divergent branches of the cubital fork, so if the identification is correct this character may not be constant. According to both figures and confirmed by my examination of the holotype, the ovipositor of *parallela* has a differentiated apical cercal segment while all other known *Pseudexechia* have simple cerci (stated by Tuomikoski to be a generic character). *P. parallela* agrees, however, with other species in the bristly tip of the median process which is not found in the other segregates of "*Exechia*".

Two European species with a divergent cubital fork, i.e. *trivittata* (Staeger) and *trisignata* (Edwards) were recognised until Stackelberg (1969) added *tristriata*, resembling *trivittata* in the male genitalia, which he figured for all species. *P. trisignata* was described and figured by Edwards (1913) from a British male, which he distinguished externally from *trivittata* only by the longer antennae. Edwards believed that *trisignata* corresponded to the "pale form" of *trivittata* recognised by Lundström (1909) who figured the genitalia of both sexes as well as the male of his dark form, which was the true *trivittata*. Later (1912) Lundström figured the ovipositor of the latter (also figured by Dzedzicki, 1915); these forms were distinguished externally by the thoracic ground colour, respectively grey or yellowish. Genital structure suggested that two species were involved but Lundström considered his material insufficient to establish this.

Some recently collected British and Irish *Pseudexechia* differing externally from *trisignata* by the yellow thoracic

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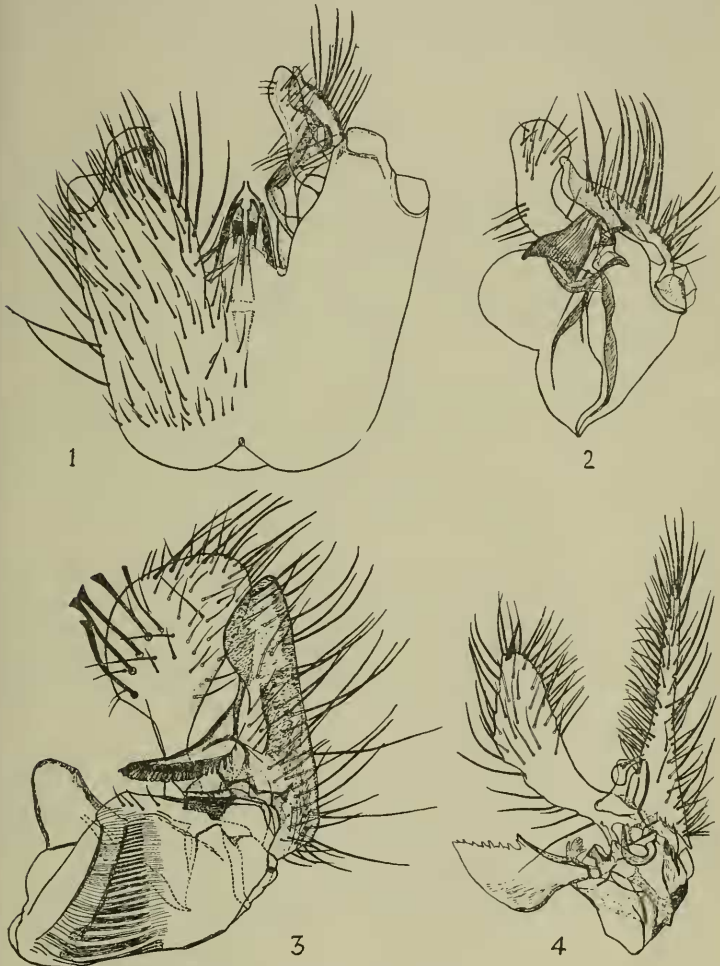
ground colour, more extensive yellow abdominal markings and shorter antennae, correspond better to Lundström's figures than does *trisignata*. These are described here as a new species which may have a northern and western distribution in the British Isles; it is the only *Pseudexechia* yet known from Ireland, although it is probable that the two widespread species also occur there.

***Pseudexechia aurivernica* sp. n.**

Exechia trivittata (Staeger), pale form: Lundström, 1909 nec Staeger, 1840.

♂ ♀ Body length a little over 4 mm.; wing length 3.2-3.5 mm.

Head dark grey; mouth-parts pale yellow. Antennae with



Figs. 1-4. Male genitalia of British *Pseudexechia*: fig. 1, ventral view of male hypopygium of *P. aurivernica* sp. n.; figs. 2-4, internal face of left claspers: 2, *aurivernica*; 3, *P. trisignata* (Edwards); 4, *P. trivittata* (Staeger).

scape, pedicel and more than half of first flagellar segment pale yellow, rest of flagellum grey; flagellar segments nearly twice as long as broad.

Mesoscutum dull yellow with three dark brown stripes, the median broadening to fore margin, faintly bifurcate in front; the laterals abbreviated to leave broad yellow shoulders, narrowed behind to enclose attenuated tip of median but not reaching scutellum, which is yellow. Pronotum and propleura yellow, pleura otherwise mainly grey dusted on a pale ground. Halteres and legs entirely pale yellow.

Disc of mesoscutum devoid of strong bristles but densely clothed with golden yellow hairs. Strong black bristles conspicuous on fore and side margins. One pair of strong scutellars and a pair of very short incurved bristles slightly basad of them. A vertical row of three upcurved pronotals; one strong propleural with a short weak one half its length anterodorsal to it.

Leg bristles weak. Tibia I with 5 a, 0-3 very short d, 5-6 short v, 27 short p; II with 24-32 short close set a, 4-5 d, 4 p; III with 4-5 a, 4-6 d, 5-7 short close-set p on apical third.

Wings faintly yellowish with yellow veins, the bristles costa and radius slightly darker, other veins bare. Vein R5 slightly downcurved apically but reaching costa distinctly nearer R1 and M1. M-stalk about two thirds length of r-m. Cu-fork well beyond base of m-fork, by about 1.5-2.5 X length of m-stalk, its branches divergent. Vein An reaching level of base of m-fork.

Abdomen: ♂ with tergite I dark, II-V with broad yellow apical bands broadened laterally to almost touch anterior lateral corners; VI with narrower yellow apical margin; hypopygium yellow, figs. 1-2; ♀ with all tergites bearing yellow apical bands, narrowed dorsally except on II, which may occupy only half of tergal length; ovipositor, fig. 6.

MATERIAL EXAMINED

Holotype ♂, GWYNEDD (Merioneth): Brithdir, near Dolgellau, 23.v.1972 (A. M. Hutson, BMNH). Paratypes ♂ ♀, CUMBRIA (Westmorland): Stock Ghyll, 5.x.1971 (A. M. Hutson, BMNH); 2 ♀, GWYNEDD: Dolgellau, goldmine, 13.ii.1972 (A. M. Hutson, BMNH); ♂, ANTRIM: Glenariff, 7.v.1970 (P. J. Chandler; recorded incorrectly in Chandler, 1976 as *trisignata* Edwards).

The colouration, antennae, wing venation and development of the propleurals are variable in *Pseudexechia* species but it is nevertheless possible to recognise the four British species from a consensus of external characters utilised in the following key (to both sexes):—

1. Thorax light to dark grey, sometimes yellowish grey laterally with three distinct slight shining black dorsal stripes 2
- Thorax dull yellow with three dark brown dorsal stripes. Abdomen more widely yellow, the broad lateral triangles forming nearly complete apical bands on all tergites. Wing venation as *trivittata* but veins yellow;

- R5 nearly straight. Antennae short, second flagellar segment 1.5-2 X long as broad. Propleura and lateral pronotal lobes yellow but propleurals as in *trivittata*. *aurivernica* sp. n.
2. Vein R5 distinctly downcurved, reaching C nearer to M1 than to R5. Cubital fork only about length of m-stem beyond m-fork. Antennae longer; second flagellar segment distinctly more than twice as long as broad. Propleura and pronotal lobes yellow. One strong propleural bristle, with a weak bristle anterodorsal to it and one of comparable length with several short hairs posterior to it. Abdomen with yellow markings restricted but may occupy entire hind margins of II-III in ♂ and of all tergites in ♀. *trisignata* (Edwards)
- Vein R5 nearly straight, not reaching C more than half way from R5 to M1. Cubital fork shorter, distinctly more than length of m-stem beyond m-fork. Antennae shorter, second flagellar segment at most twice as long as broad. 3
3. Cubital fork (as above species) with branches divergent. R5 slightly downcurved at tip. Propleura and pronotal lobes grey; the strong propleural has a weak bristle half its length anterodorsal to it and no short hairs behind. Abdominal colouration variable, often a yellow band on tergite II, reduced to triangles on subsequent tergites in ♂ but usually complete apical bands again in ♀, which has single segmented cerci. *trivittata* (Staeger)
- Cubital fork short, with parallel branches, Cu2 not reaching wing margin. Propleura and pronotal lobes yellow, propleurals as in *trivittata* but the upper more than half length of strong lower one. Abdomen mainly dark with posterolateral yellow areas (only ♀ seen); ovipositor with two-segmented cerci. ... *parallela* (Edwards)

MATERIAL EXAMINED OF OTHER BRITISH SPECIES

P. trivittata (Staeger) (Figs. 4, 7)

44 ♂ and 26 ♀ from many parts of Britain north to Moray, although mostly from England and Wales. Edwards (1925) referred to males swarming over old horse dung at Strelley, Notts., 21.ix.1922. It seems likely that the attraction to dung would be the presence of small *Coprinus species* on it. I took a male at Downe, Kent, 10.ix.63 on a small fungus (possibly *Coprinus*) in damp grass and a male at Old Slade, Bucks., 7.viii.1973 on *Coprinus radians* growing on an elm log.

P. trisignata (Edwards) (Figs. 3, 5)

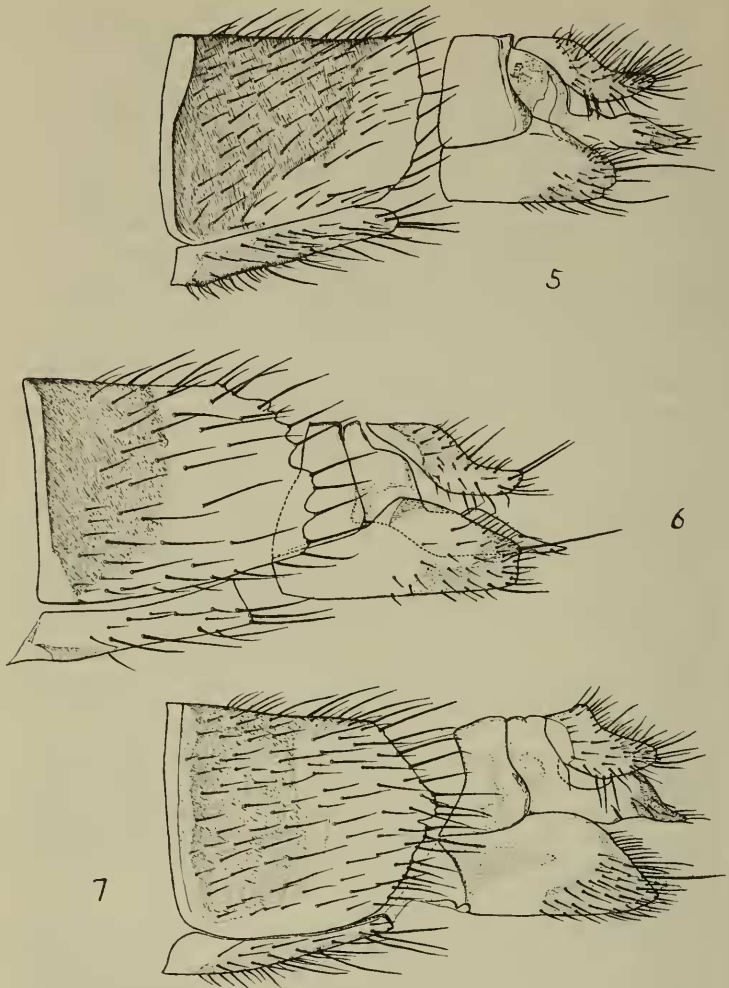
20 ♂ and 14 ♀, including holotype ♂; throughout Britain, less common than *trivittata* in the south but more frequent in Scotland north to Ross, including the islands of Arran and Eigg.

P. parallela (Edwards)

Only the holotype ♀.

The Nearctic species of *Pseudexechia*

It is necessary to discuss the Nearctic species here because



Figs. 5-7. Ovipositors of British *Pseudexechia* in lateral view: 5, *trisignata* (Edwards); 6, *aurivernica* sp. n.; 7, *trivittata* (Staeger).

of the suggestion by Tuomikoski (1966) that *canalicula* (Johannsen) may be conspecific with *trisignata*, over which it would have priority. Only one other described Nearctic species is certainly known to belong here, i.e. *ovata* (Fisher). The types of both and a small amount of further material have been examined.

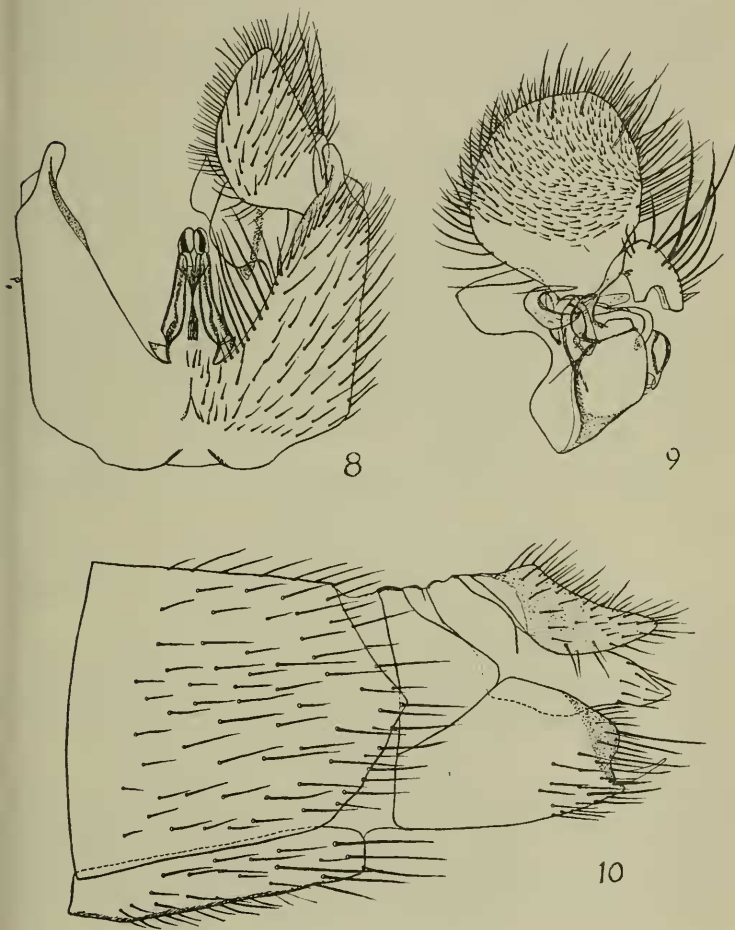
Pseudexechia canalicula (Johannsen)

Exechia canalicula Johannsen 1912, 69; (to *Pseudexechia*, Tuomikoski 1966, 180)

From examination of the holotype (the only ♂ seen), I cannot confirm the synonymy of this species with *trisignata*, but examination of more material would be necessary to be certain as they are evidently close. The shape of the claspers

is almost identical but the form of the internal process of the upper clasper is a little different, being expanded into a fan shape apically as in *aurivernica* but with discrete marginal processes as in *tresignata*; it was figured by Johannsen (1912) and by Shaw & Fisher (1952). Externally the holotype of *canalicula* differs from *tresignata* in lacking short hairs behind the propleurals; the other salient features are as follows: —

Mesoscutum with yellowish grey ground colour. Prothorax brownish yellow; 1 strong propleural, a second a-d to it, half its length. Wings slightly yellowish, R5 a little downcurved at tip, nearer to M1 than to R1 (costal sections 1.3: 1). Cu-fork 1.5 X m-stem beyond base of m-fork. Broad yellow triangles on apical margins of abdominal tergites. (Antennae missing.)



Figs. 8-10. Genitalia of *Pseudexechia ovata* (Fisher): 8, ventral view of male hypopygium; 9, internal view of left claspers; 10, lateral view of ovipositor.

One paratype ♂ (lacking wings and abdomen) has antennae present with flagellar segments about 2 X as long as broad. The ♀ allotype is similar to the holotype except that m-stalk is shorter, 0.6 X long as r-m and Cu-fork, consequently more than 2 X m-stalk beyond base of m-fork. Its flagellar segments are slightly less than 2 X long as broad. These specimens have the same data (North Carolina) as the holotype but a second paratype ♂ (Brookside, Morris Co., New Jersey) is not conspecific but belongs to *P. ovata*. The ovipositor of *canalicula* closely resembles that of *trisignata*.

Pseudexechia ovata (Fisher), **comb. n.** (Figs. 8-10)

Exechia ovata Fisher, 1934, 278

The holotype ♂ (slide mounted), two further ♂ and a probable ♀ have been examined. The form of the claspers is quite distinct from any other known *Pseudexechia*, although the overall hypopygial structure with the bud-like sternal process is characteristic of the genus. The salient features are as follows:—

Flagellar segments almost to quite 2 X long as broad. Mesoscutum with yellowish ground colour in holotype and other material except Ohio ♂ where it is grey; three dark brown stripes as in other Holarctic species. Prothorax grey dusted; one strong propleural with a second short paler, a-d to it, 0— few short hairs just behind them.

Wings greyish with faint darker shades on apical part of fore margin and on base of median fork. R5 only slightly downturned at tip but reaching C a little nearer to M1 than to R1. Cu-fork with divergent branches, variable in length from nearly 2 X length of m-stalk beyond base of m-fork to only a little more than length of m-stalk beyond; m-stalk nearly as long as r-m.

Abdomen mainly dark, with yellow posterior triangles on tergites II-VI (progressively narrower), just touching on dorsal mid line. Hypopygium yellow, figs. 8-9; ovipositor, fig. 10.

The female (same data as one male) has the thorax with ground colour more yellowish and R5 more downturned, reaching costa three-fifths of distance from R5 to M1.

MATERIAL EXAMINED

Holotype ♂, NEW YORK: Ithaca, 11.iv.1933 (Shaw coll., Cornell Univ.); NEW JERSEY: Brookside, vii, ♂ paratype of *canalicula* (Johannsen coll., Cornell Univ.); OHIO: Hocking Co., 1.viii.1949, ♂ ♀ (F. W. Mead, Washington Mus.).

Another ♀ from CALIFORNIA: Stanford University, 27.i.1906 (labelled *canalicula*, Washington Mus.) has a distinct ovipositor similar to that of *trivittata* and apparently represents a third Nearctic species of the genus. Its external characters are also very like *trivittata* but associated males are desirable before deciding on its identity.

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References

- Burghel-Balacesco, A. 1972 Contribution a l'étude des Mycetophilidae des grottes de Roumanie avec la description de deux especes nouvelles. *Int. Journ. Speleol.*, 3: 387-395.
- Chandler, P. J. 1976. A preliminary list of the fungus gnats (Diptera, Mycetophilidae) of Ireland. *Proc. R. Irish Acad.*, 76 (B): 87-108.
- Dziedzicki, H. 1915. Atlas des organes génitaux des types de Winnertz et des genres de sa collection de Mycétophiles. *Pub. Soc. Sci. Varsovie*, 3: 1-10, pl. 1-21.
- Edwards, F. W. 1913. Notes on British Mycetophilidae. *Trans. ent. Soc. Lond.*, 1913: 334-382.
- Edwards, F. W. 1925. British Fungus Gnats (Diptera, Mycetophilidae) with a revised generic classification of the family. *Trans. ent. Soc. Lond.*, 1924: 505-662.
- Fisher, E. G. 1934. Four new species of Mycetophilidae (Diptera). *Canad. Entom.*, 66: 276-278.
- Johannsen, O. A. 1912. The fungus gnats of North America. Part IV. *Maine Agr. Expt. Sta. Bul.* (ser. 2), 200: 57-146.
- Lackschewitz, P. 1937. Die Fungivoriden des Ostbaltischen Gebietes. *Arb. Naturforsch. Ver Riga*, 21: 1-47.
- Lundström, C. 1909. Beiträge zur Kenntnis der Dipteren Finlands. IV. Supplement. *Acta Soc. Fauna Fl. Fennica*, 32: 1-67.
- Lundström, C. 1912. Beiträge zur Kenntnis der Dipteren Finlands. VIII. Suppl. 2. *Acta Soc. Fauna Fl. Fennica*, 36: 1-70.
- Shaw, F. R. & Fisher, E. G. 1952. Guide to the insects of Connecticut. Part VI. *Conn. State Geol. & Nat. Hist. Survey Bull.*, 80: 177-250.
- Stackelberg, A. A. 1948. New or unknown species of Fungivoridae from the Leningrad district (in Russian). *Ent. Obozr.*, 30: 94-102.
- Stackelberg, A. A. 1969 (with Ostroverkhova, G. P.) 24. Mycetophilidae (Fungivoridae) in Bey-Bienko (Ed.). Keys for the determination of Insects of European U.S.S.R. (in Russian), 5: 265-320.
- Tuomikoski, R. 1966. Generic taxonomy of the Exechiini (Dipt., Mycetophilidae). *Ann. ent. fenn.*, 32: 159-194.

Current Literature

The Insects and Plants of the Alver Estuary near to Gosport, Hampshire, being a survey of Browndown, Cherque, the Wild Grounds and Gilkicker Point with notes on adjoining areas, compiled by **D. Appleton, M. Bryant, R. Dickson** and **G. Else**. Sm. 4to., stiff wrappers, 154 pp., folding map. Duplicated and published by R. Dickson (1977). Obtainable from the publisher at St. Michael's Vicarage, Hempsted Road, Paulsgrove, Portsmouth, Hants. Price 60p.

Here is another of those enterprising "home produced" local lists by this now familiar team of specialists. Among the 615 lepidoptera listed, are such interesting species as *Hadena albimacula* Borkh., *Simyra albovenosa* Goeze, *Photedes fluxa* Hb., *Ectoedemia erythrogenella* Joannis, *Coleophora frischella* L., *C. salicorniae* Wocke, *Nascia ciliaris* Hb., *Acleris lorquiniana* Dup., *Ephestia parasitella* Stgr. ssp. *unicolorella* Stgr. and *Apomyelois bistriatella* Hulst. ssp. *neophanes* Durrant.